2007

U.S. Army Corps of Engineers Omaha District Monthly Drought Report, August 2007

U.S. Army Corps of Engineers

Omaha District

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Cover Photo: Missouri River near Williston, ND; fall 2006. Photo courtesy of ESA Adolfson.

CURRENT CONDITIONS

The month of July left no doubt that the extended drought has not ended. The upper three reservoirs (Ft. Peck, Garrison, and Oahe) each dropped approximately one foot. Lack of adequate rainfall coupled with low inflows and early loss of the below normal snowpack are major contributors to the falling reservoirs. However, runoff in the lower basin remained above average and, therefore, the releases from the upper reservoirs remained low, which helped to conserve water within the system. According to the most recent U.S. Drought Monitor, portions of the basin are once again classified as experiencing "severe drought" conditions. Finally, based on the most current reservoir elevation predictions prepared by the Water Management Office of the Northwestern Division of the U.S. Army Corps of Engineers, it does not appear that any of the municipal intakes in the basin are in jeopardy of running out of water for the foreseeable future.

Precipitation Departures

Precipitation departures from normal during the last 72 months for the United States are shown in Figure 1. The figure indicates that large portions of the basin are still experiencing a long-term precipitation deficit, however, the basin continues to trend towards "normal".

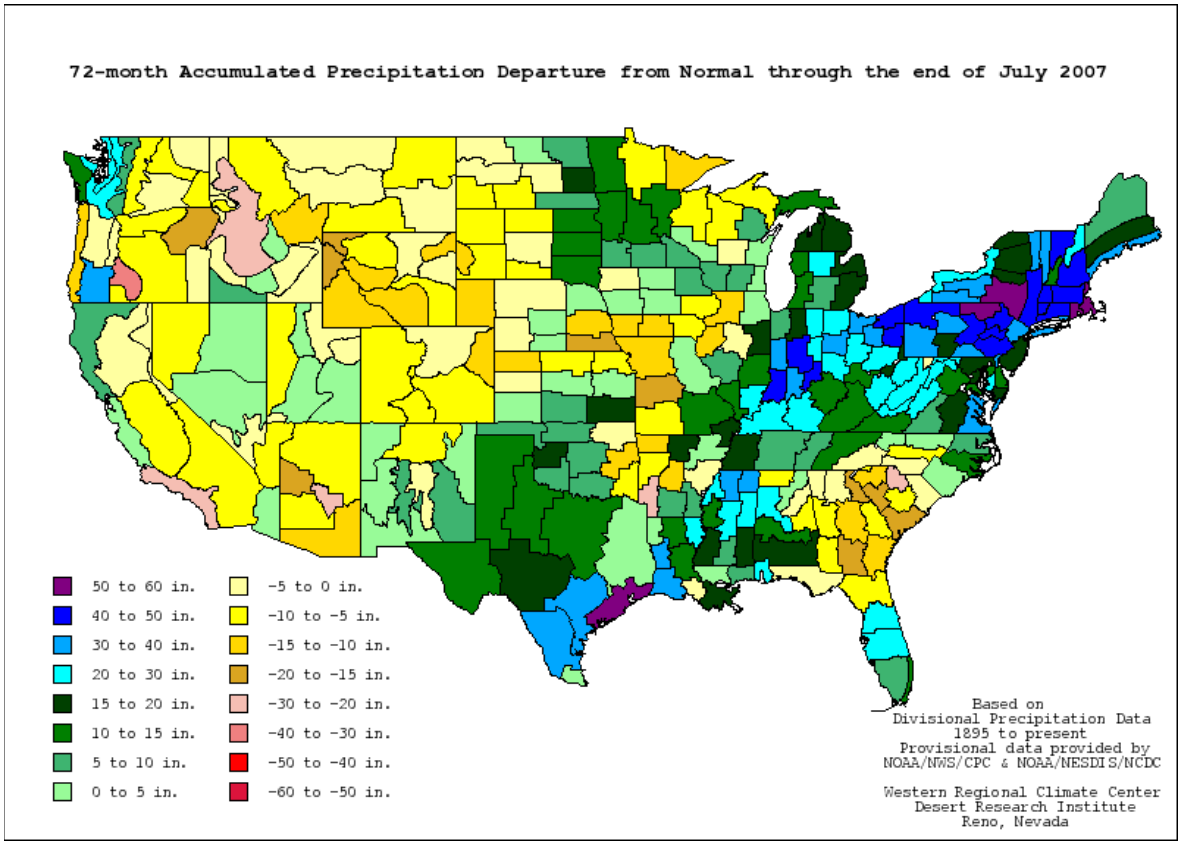


Figure 1 – 72 month Precipitation Departure From Normal
http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep72

The 12-month precipitation accumulation in Figure 2 indicates that, with the exception of northwest Nebraska, the vast majority of the basin is either “normal” or has received a surplus of precipitation.

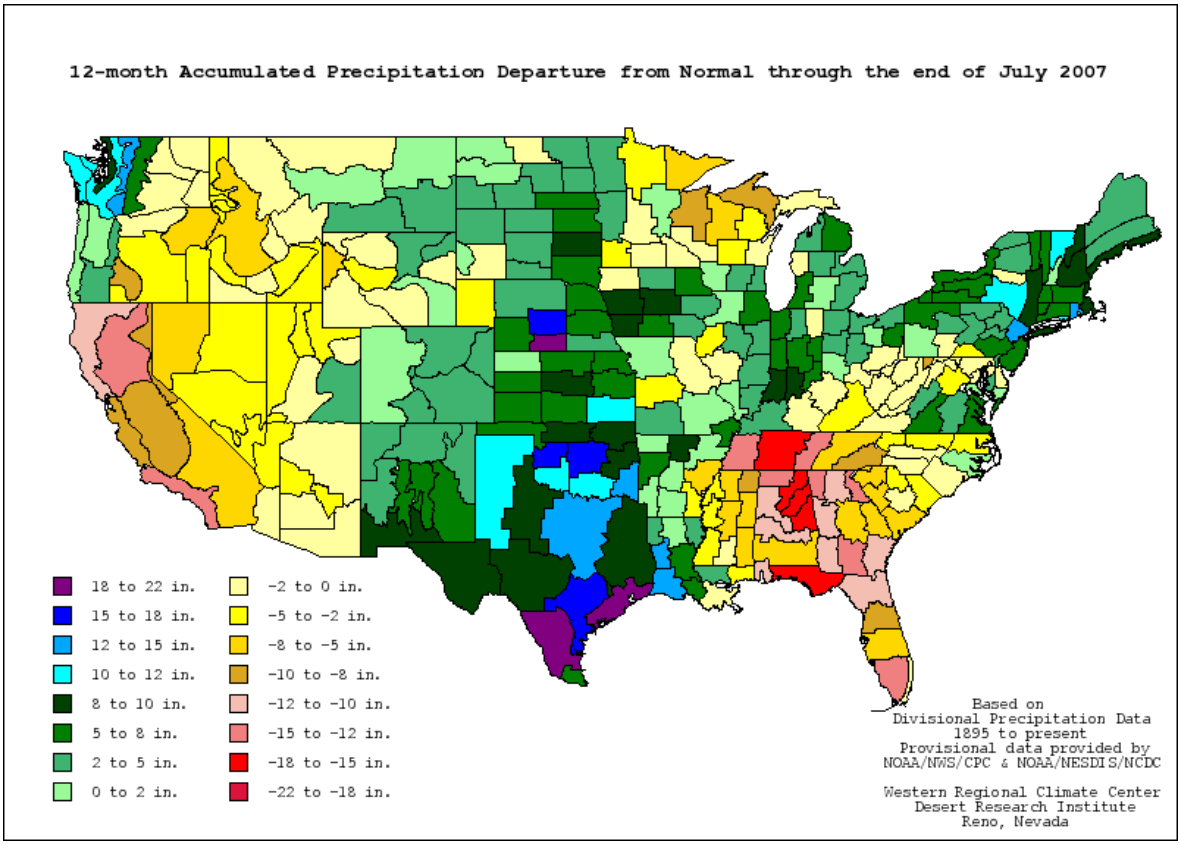


Figure 2 – 12 month Precipitation Departure From Normal
http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep12

The three-month period (Figure 3) shows that much of the basin is approaching normal rainfall amounts.

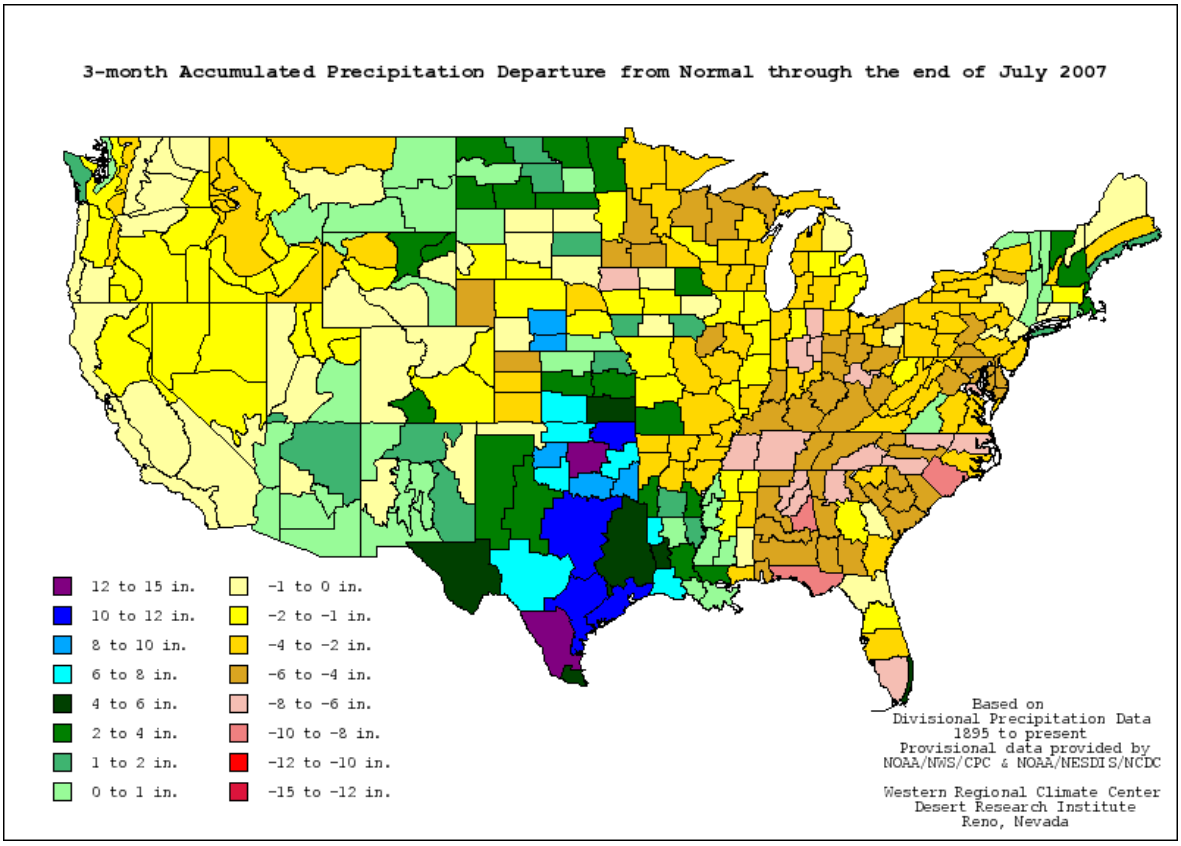


Figure 3 – 3 month Precipitation Departure From Normal
http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep03

For the month of July, generally, the basin received nearly average rainfall, which is indicated in the following figure (Figure 4).

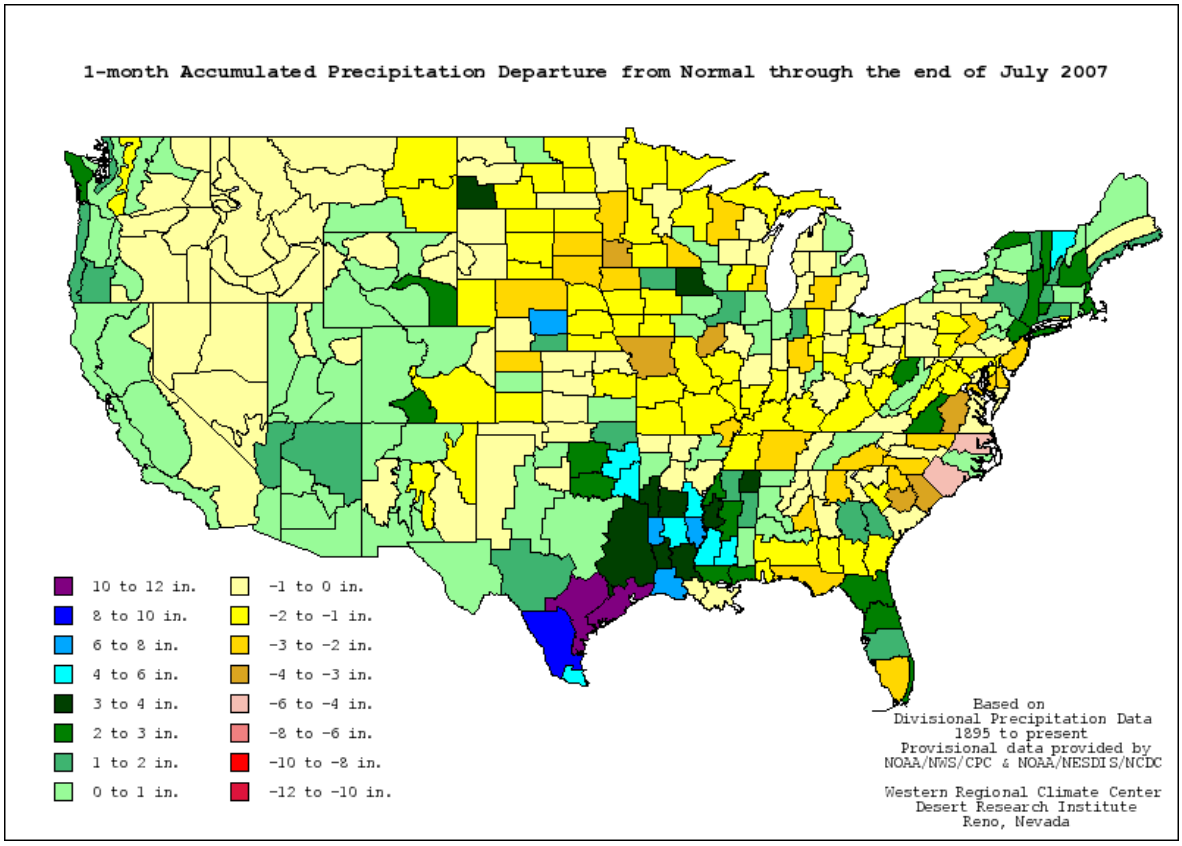


Figure 4 – 1 month Precipitation Departure From Normal
http://www.wrcc.dri.edu/cgi-bin/spiFmap.pl?dep01

Drought Indicators

The Palmer Drought Severity Index and the Drought Monitor are two commonly used drought-indicator products that convey both short-term and long-term drought conditions and impacts. Both the Palmer Index and Drought Monitor depict some regions exhibiting varying degrees of drought in Nebraska, South Dakota, Wyoming, and Montana, which have been suffering from drought since 2000.

Palmer Drought Severity Index

The Palmer Drought Severity Index (PDSI) is a meteorological drought index that monitors the hydrologic water balance including the basic terms such as precipitation, evapotranspiration, soil recharge, runoff, and moisture loss. The purpose of this index is to provide standardized measurements of the moisture balance in a region without taking into account streamflow, lake and reservoir levels, and other hydrologic impacts. PDSI is a multi-month drought index; therefore, it responds well and is more suitable for short-term droughts.

Changes to the PDSI are more immediate in response to heavy precipitation over short periods. Figure 5 indicates that the majority of the basin is receiving near normal or even a surplus of short-term moisture.

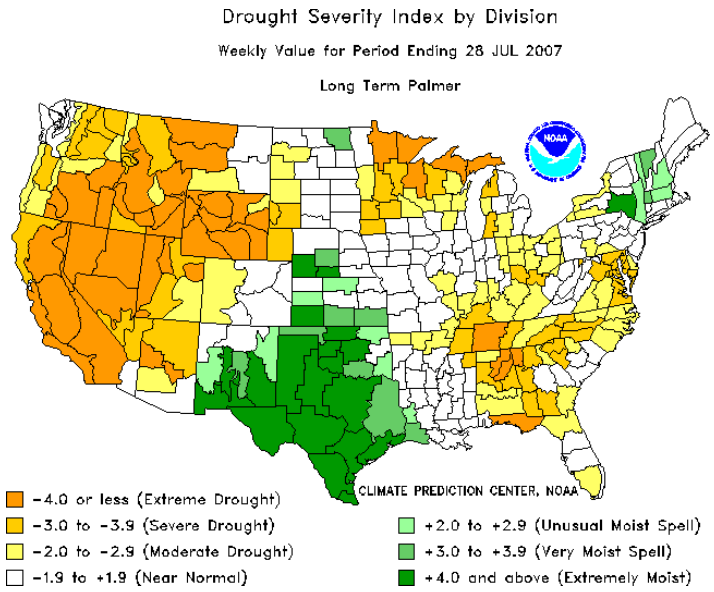


Figure 5 – Long-Term Palmer Drought Indicator Ending 28 July 2007
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/palmer.gif

Drought Monitor

The Drought Monitor is a multi-agency comprehensive drought classification scheme updated weekly by the National Drought Mitigation Center. The Drought Monitor combines information from the Palmer Drought Index, the Climate Prediction Center's soil moisture model, USGS weekly streamflow percentiles, the standard precipitation index, the crop moisture index, and during the snow season basin snow water content, basin average precipitation, and the surface water supply index. Since this product considers streamflow conditions and reservoir water supply, and it allows manual adjustment; it is a good depiction of long-term drought impacts to the affected areas. The Drought Monitor uses four levels of drought classification (moderate, severe, extreme, and exceptional), and it notes the type of impact caused by the drought (agricultural and hydrologic).

As is indicative of the figures below, most of the basin is classified as experiencing no drought effects, however portions of the basin have slipped back into the "abnormally dry" or "severe drought" classification.

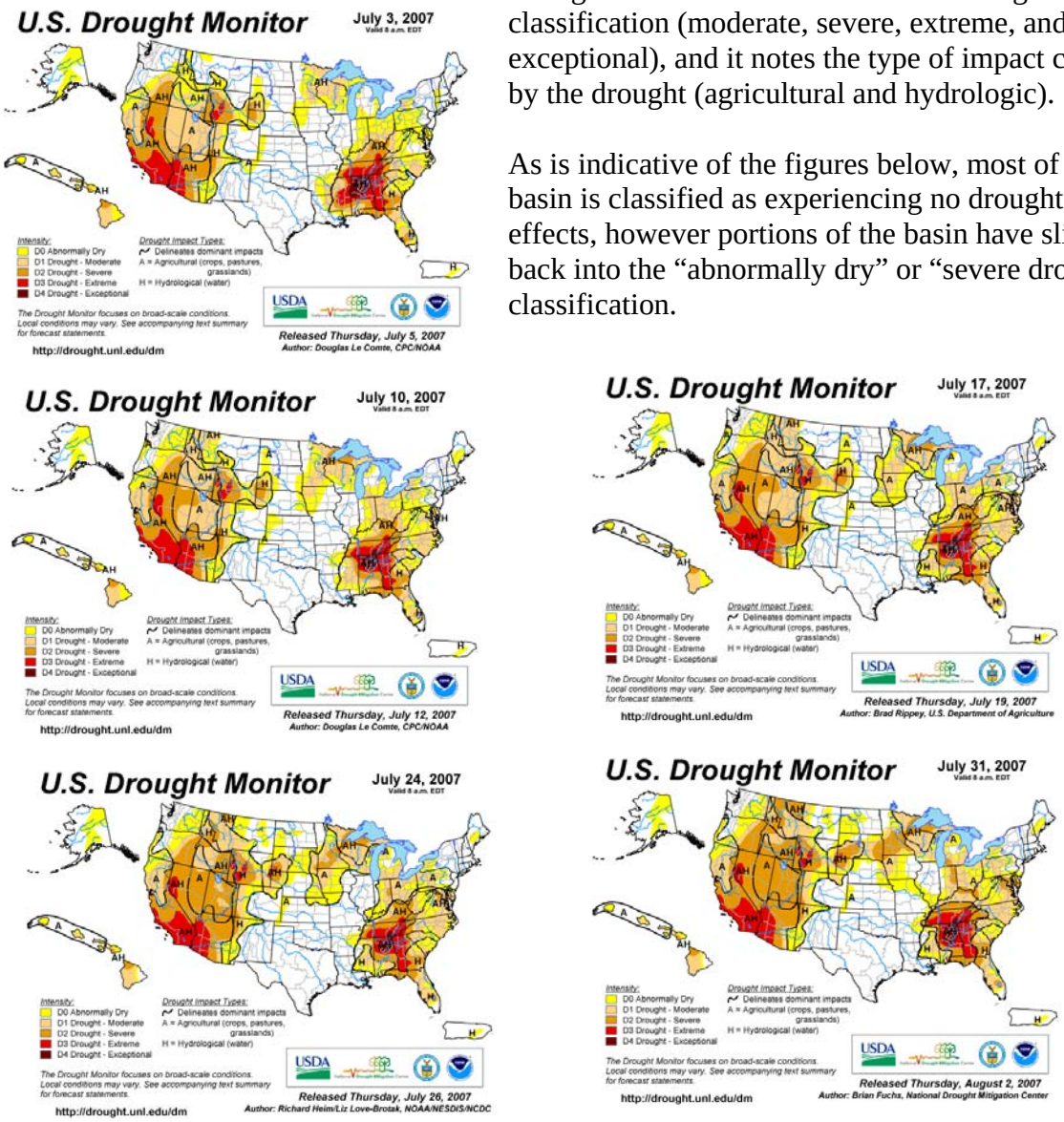


Figure 6 – U.S. Drought Monitor – July 3, 2007 through July 31, 2007
http://www.drought.unl.edu/dm/monitor.html

DROUGHT OUTLOOK

The basin drought outlook uses several expert products that indicate precipitation needs necessary to reduce the Palmer Drought to normal conditions, a one- and three-month climate outlook, and the impacts that future climate predictions could have on the current drought situation. The three-month Drought Outlook (Figure 7) indicates that only small portions of Nebraska and South Dakota are expected to experience persistent drought effects.

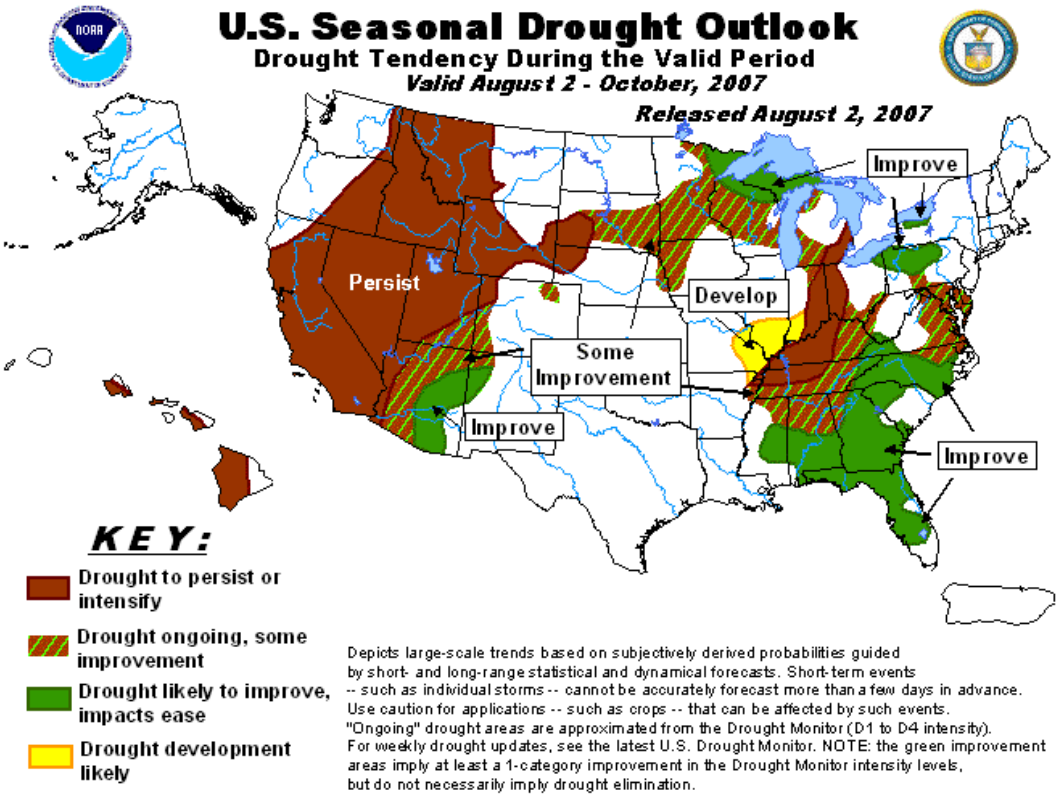


Figure 7 – Three-Month Seasonal Drought Outlook through September 2007
http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html

Weekly Precipitation Need

Figure 8 is the weekly precipitation needed to reduce the current Palmer Drought Severity Index value to -0.5 or near normal conditions.

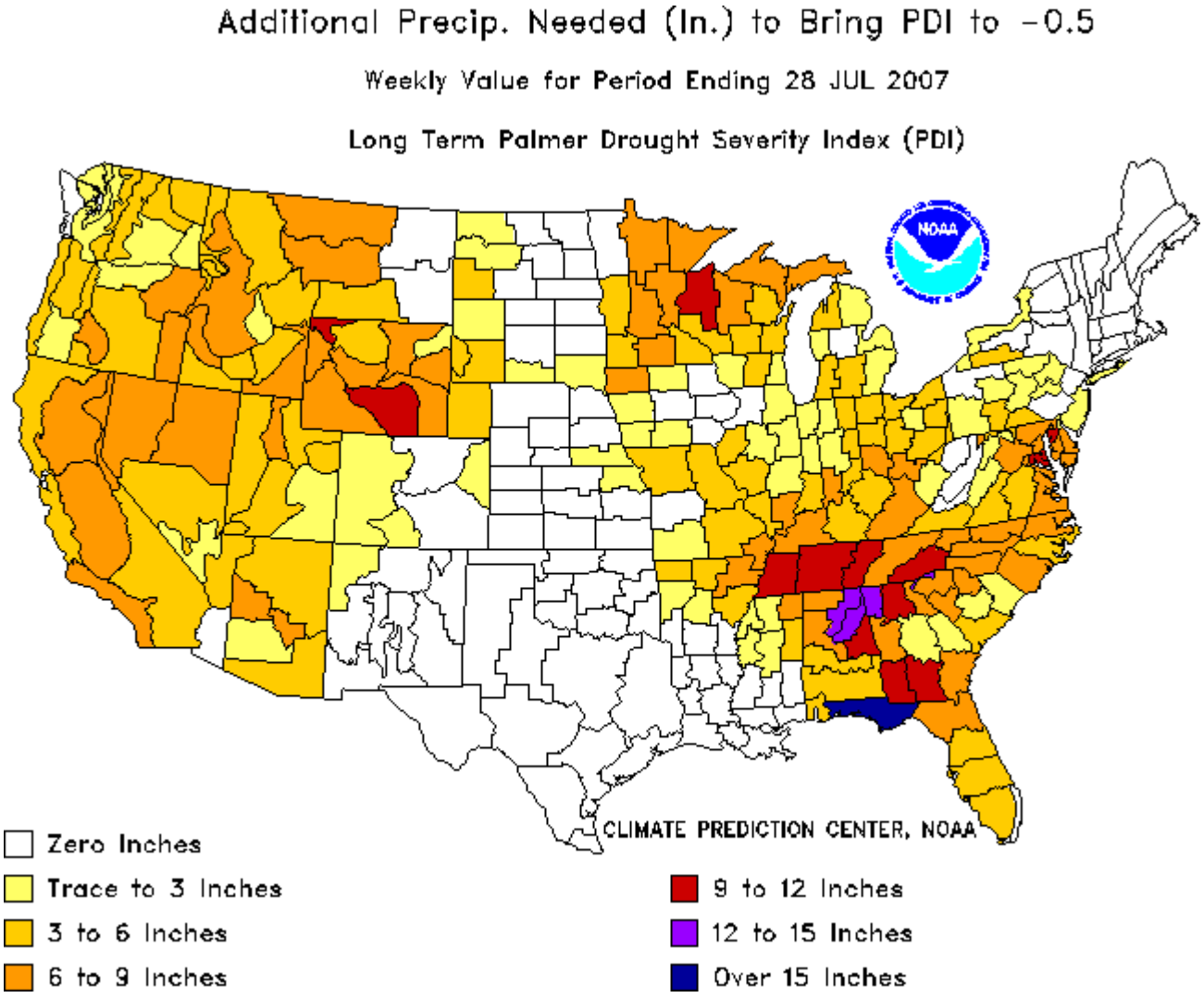


Figure 8 – Weekly Precipitation Need to Bring PDI to -0.5
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/regional_monitoring/addpcp.gif

The following Missouri River Region Mountain Snowpack Report for the 2006-2007 winter is taken from the U.S. Army Corps of Engineers, Northwestern Division, Missouri River Basin, Water Management Division.

Missouri River Region Mountain Snowpack Report

2006 - 2007 Mountain Snowpack Report for Missouri River Basin

Summary of Winter 2006-2007. The Missouri River runoff for 2006 was19.0 MAF, 75% of normal. This marked the seventh consecutive year of less than normal runoff in the basin. The continued drought has taxed the System storage leaving upstream reservoir levels very low, much like what occurred in the drought of the mid 1980's and early 1990's. The forecasted runoff for 2007 is 21.7 MAF, 86% of normal. As of July 1, all mountain snowpack in the Missouri River basin has melted. Normally, 100% of the peak accumulation has occurred by April 15 and normally 5% remains on July 1.

The following tabulation is a summary of this year's mountain snowpack accumulations and the CY 2007 runoff forecast for the first of each month. The main stem reservoirs are significantly below their base of the annual flood control zones due to seven consecutive years of drought and the system stands poised to handle significant runoff if that were to occur during 2007.

CY 2007 Mountain Snowpack Accumulations in Percent of Normal Peak

Drainage Basin	Jan	Feb	Mar	Apr	May	Jun	Jul
Above Fort Peck Dam	80%	74%	85%	73%	61%	14%	0%
Fort Peck to Garrison	77%	74%	83%	76%	65%	19%	0%
Percent of Normal Total Acc.	79%	74%	84%	75%	63%	16%	0%
North Platte River	87%	78%	86%	80%	62%	16%	0%
South Platte River	130%	113%	111%	100%	100%	34%	0%

Forecasted CY 2007 Missouri River Basin Annual Runoff in MAF

Location	Jan	Feb	Mar	Apr	May	Jun	Jul
Above Sioux City, Iowa.	20.0	19.3	20.1	20.5	20.3	20.8	21.7
Percent of Normal 25.2 MAF	79%	77%	80%	82%	81%	83%	86%

SNOTEL Mountain snowpack station data is provided by the National Resource Conservation Service. Normally by April 15, 100% of the peak accumulation has occurred. The January through June 2006 actual runoff above Sioux City was 13.2 MAF, 81% of normal. The 2006 Calendar Year runoff above Sioux City was 19.0 MAF, 75% of normal. The forecasted runoff for 2007 is 21.7 MAF, 86% of normal. As stated earlier, the Missouri River basin endured its seventh consecutive year of drought in 2006. The July 3, 2007 drought monitor map (http://drought.unl.edu/dm/monitor.html) indicates that the western quarter of the Nebraska and the Dakotas as well as most of Wyoming are in

abnormally dry or moderate drought conditions. The rest of the Missouri River basin are in not currently experiencing drought conditions.

The table above labeled CY 2007 Mountain Snowpack, gives information in percent of average for the two significant snowpack accumulation reaches of Fort Peck and Fort Peck to Garrison. The snow melts during the May through July timeframe and provides significant main stem inflow which is stored to prevent downstream flooding and later used to meet main stem authorized project purposes. Even knowing the amount of snow at the first of each month for selected mountain snowpack areas results in considerable runoff variability because the weather conditions during the melt period greatly influences the runoff yield. The total percent of normal accumulation are shown for the first of each month through May. For the period of May through July the percentages shown are a percent of the peak accumulation for the year to indicate the remaining snow to melt in the mountains.

Mainstem Reservoir Information

During the month of July, all three of the upper Missouri River mainstem reservoirs fell nearly one foot in elevation. Specifically, Ft. Peck lost 0.7-feet, Garrison lost 1.1-feet, and Oahe lost 1.0-foot. The early spring rains that were providing much relief to the basin seem to have tapered off and portions of the basin are once again experiencing some form of drought as defined by the U.S. Drought Monitor.

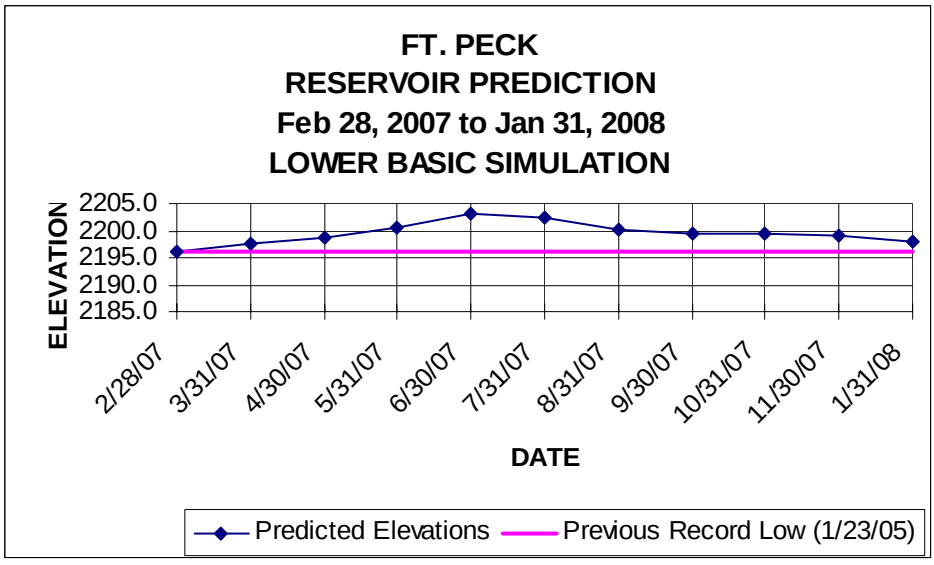
Fort Peck, Montana

Reservoir Elevation Overview

Lake Elevation 07/31/2006 (ft. msl)	Current Lake Elevation 07/31/2007 (ft. msl)	30-Day Projected Elevation (08/31/2007) (ft. msl)	180-Day Projected Elevation (01/31/2008) (ft. msl)
2205.0	2202.4	2200.3	2198.0

Comments:

1. Current reservoir elevation is 31.6-feet below the top of conservation pool (elevation 2234.0 ft. msl).
2. Projections provided are based upon the Lower Basic Simulation prepared by the Reservoir Control Center.
3. Current elevation is 2.6-feet lower than 07/31/06 (2205.0).
4. The elevation of 2196.2 is the current record low.



Water Intake Overview

Intake	Comments
Hell Creek State Park	No issues. Well completed 22 NOV 2004

Access Overview

1. 15 ramps usable; 3 ramps unusable. No permanent ramps operational.
2. $250,000 programmed for boat ramp extensions/maintenance in FY 2007.
3. Once the reservoir is free of ice, the boat ramps will be extended to provide the most optimum access possible given the current reservoir conditions.

Boat Ramp	Status	Bottom Elevation	Top Elevation	Managing Agency
Fort Peck Marina	USABLE	2197	2250	COE/Concessionaire
Duck Creek	USABLE	2197	2250	COE/MTFW&P
Flat Lake	USABLE	2197	2250	COE
Rock Creek (North Fork)	USABLE	2197	2250	COE/MTFW&P
Rock Creek Marina	USABLE	2197	2250	Concessionaire
Nelson Creek	UNUSABLE	2220 (Cannot Be Extended)	2250	COE
Hell Creek	USABLE	2197	2250	COE/MTFW&P
Devils Creek	USABLE	2197	2250	COE
Crooked Creek	UNUSABLE	2223 (Cannot Be Extended)	2250	Concessionaire
Fourchette	UNUSABLE	2204 (Cannot Be Extended)	2250	COE
Bone Trail	USABLE	2197	2250	COE
Pines	USABLE	2197	2250	COE
James Kipp	USABLE	Missouri River, Upstream of Dam		BLM
Floodplain	USABLE	Missouri River, Below Dam		COE
Roundhouse Point	USABLE	Missouri River, Below Dam		COE
Nelson Dredge	USABLE	Missouri River, Below Dam		COE
Trout Pond	USABLE	Missouri River, Below Dam		MTFW&P
Rock Creek West	USABLE	Missouri River, Upstream of Dam		USFWS

Noxious Weeds Overview

1. As the reservoir elevation dropped, the noxious weeds spread along the shoreline.
2. Main concern is Saltcedar, which thrives along the shoreline as the reservoir elevation declines.
3. $200,000 programmed for noxious weed control in FY 2007.

Cultural Resources Overview

1. No issues to date.

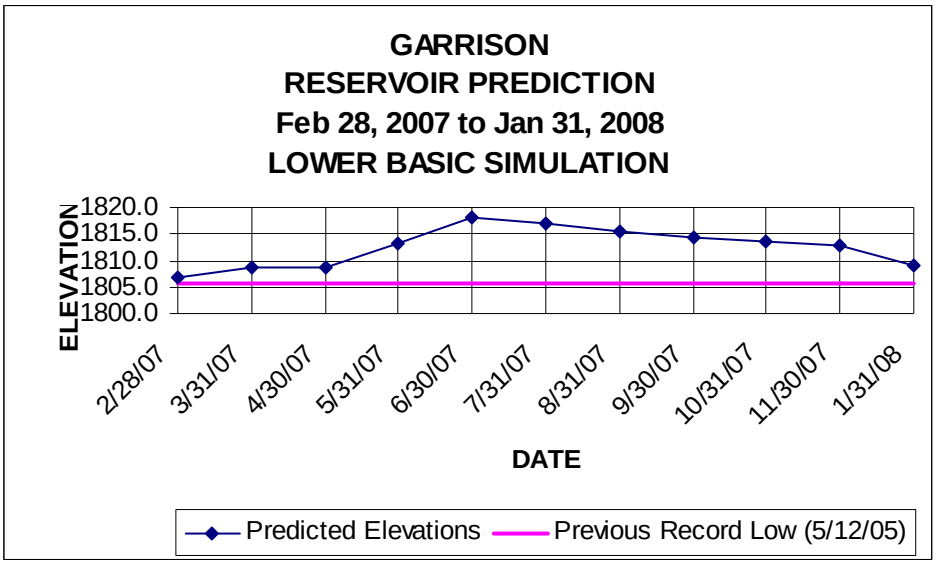
Garrison, North Dakota

Reservoir Elevation Overview

Lake Elevation 07/31/2006 (ft. msl)	Current Lake Elevation 07/31/2007 (ft. msl)	30-Day Projected Elevation (08/31/2007) (ft. msl)	180-Day Projected Elevation (01/31/2008) (ft. msl)
1815.6	1816.8	1815.3	1809.2

Comments:

1. Current reservoir elevation is 20.7-feet below the top of conservation pool (elevation 1837.5 ft. msl).
2. Projections provided are based upon the Lower Basic Simulation prepared by the Reservoir Control Center.
3. Current reservoir elevation is 1.2-feet higher than elevation on 07/31/06 (1815.6).
4. Record low for the reservoir is 1805.76 on May 12, 2005.



Water Intake Overview

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Whiteshield	Operational	1816.8	1787	1805	1794	1796	720	N	TAT/BOR

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005. The intake was extended and lowered 2-feet since the Corps' survey in 2005.
2. Operation concern level corresponds to previous record lows where erosion of newly exposed shoreline may cause problems with erosion at the intake.

Future Plans:

1. Contract awarded to Northern Improvement to install a new intake. The new intake will be installed at elevation 1763.0±, lowering the intake 24-feet below its current elevation. The project is scheduled to be completed by July of 2007.
2. Project design includes a 950-feet bored pipeline into the lake at elevation 1763. The line will be 24" polyethylene pipe. New SCADA control and pumps are included in the project design. The Title of the project is: "FBRW 2006A; East Segment Intake Replacement".
3. FBRW has the option of discontinuing existing system or keeping the system in operation as a backup.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Twin Buttes	Operational	1816.8	1784.4	1805	1788	1790	425	N	TAT/BOR

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. Erosion due to low reservoir levels have caused increased sediment in the intake piping. This has increased maintenance cost to remove the sediment and increased the cost of treating the water.

Future Plans:

1. A contract to install a new intake at elevation 1741.0, 41 feet below the current screen elevation was awarded to Northern Improvement. Work was started in October 2006 and will be completed by July 2007.
2. Project design includes an 800-feet bored pipeline into the lake at elevation 1741. The line will be a 24" polyethylene pipe. New SCADA control and pumps are included in the design. The title of the project is: "FBRW 2006 C; South Segment Intake Replacement".
3. FBRW has the option of discontinuing existing system or keeping the system in operation as a backup.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Mandaree	Operational	1816.8	1786	1789.0	1789	1794	780	N	TAT/BOR

Comments:

1. The new intake screen is at elevation 1786.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Four Bears	Operational	1816.8	1789.9	1800.0	1792	1794	900	N	TAT/BOR

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. Erosion due to low reservoir levels have caused increased sediment in the intake piping. This has increased maintenance cost to remove the sediment and increased the cost of treating the water.

Future Plans:

1. A contract to install a new intake at elevation 1785.0 was awarded to Northern Improvement. Work was stated in October 2006 and will be completed by July 2007.
2. The project design includes 1,160-feet of 24-inch polyethylene pipe bored into the reservoir. The design includes SCADA control and new pumps.
3. FBRW has the option of discontinuing existing system or keeping the system in operation as a backup.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Parshall	Operable	1816.8	1803.6*	1806.6	1797.5	1801.5	1000	N	Parshall

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. The City had a telescoping riser attached to the intake by 30 July 2005. The riser extended the intake to within 3- to 4-feet of the water's surface.
3. Require at least 3 feet of water over the intake for proper operation.
4. Water quality at current level is good following water treatment.
5. Technical Assistance Report was completed by the Corps of Engineers for Parshall in December 2006.
6. A backup well is available for use should the intake fail. The well has been used successfully in the past.

Future Plans:

1. Discussions have been held between Parshall and New Town regarding future water supply. No formal decisions have been reached. Parshall is a proposed supplier for the Rural Water System.

*Screen is raised or lowered according to reservoir elevations.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Pick City	Operational	1816.8	1795	1800	1798	1800	200		Pick City

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. At least 5-feet of water is necessary to operate this intake. If continued usage is planned, the intake will have to be lowered.

Future Plans:

1. Rural water is available to the City, however, they have chosen to continue using their intake until the water no longer meets State Health Standards or work is required on their intake.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Garrison	Operational	1816.8	1787.2	1805	1792	1792	1830	N	Garrison

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. A regulatory permit was currently issued for the reinstallation of existing 950-feet of 8" poly pipe and installation of new 250-feet of 8" poly pipe to extend the intake system.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
SW Pipeline	Operational	1816.8	1779.0	1782	1776		34,000	N	SW Pipeline

Comments:

1. This system provides water for the City of Dickinson, Antelope Valley Power Plant, Coal Gasification Plant, and the Southwest Water Authority.

Access Overview

1. Ft. Stevenson State Park Marina received $10,000,000 in funding. The current schedule has a functional marina in the Spring/Summer of 2009.
2. The Ft. Stevenson Marina project advertised for bids July 9, 2007 and the bid opening is scheduled for August 10, 2007.
3. $250,000 programmed for boat ramp extensions/maintenance.

The following table provides the updated boat ramp status on Lake Sakakawea.

Updated 8/1/2007

Reservoir Elevation 07/31/07 – 1816.8

Location	Type	Top Elevation	Bottom Elevation	Comments	Managing Agency	Contact Person	Phone
Beaver Bay (low-water-COE)	poured concrete	1829	1808	**Usable**	Corps of Engineers	Linda Phelps	654-7411
Beulah Bay	poured concrete	1852.4	1799	**Usable**	Beulah Park Board	Bev Sullivan	873-5852
Camp of the Cross	Slide-in metal sections	1819	1806	**Usable**	Lutheran Bible Camp	Larry Crowder	337-2246
Charging Eagle Bay (1st low water)	poured concrete	1829.2	1810.6	**Usable (Can be extended)**	Three Affiliated Tribes	Jim Mossett	880-1203
Dakota Waters Resort (low-water)	poured concrete, planks	1853.4	1802.6	**Usable**	Beulah Park Board	Kelvin Heinsen	873-5800
Deepwater Creek (2nd low water)	concrete planks & metal	1820	1805.5	**Usable**	Corps of Engineers	Linda Phelps	654-7411
Deepwater Creek (1st low water)	poured concrete	1838.5	1809	**Usable**	Corps of Engineers	Linda Phelps	654-7411
Douglas Creek (low water)	poured concrete, planks	1831	1790	**Usable**	Corps of Engineers	Linda Phelps	654-7411
Fort Stevenson State Park (low water)	poured concrete	1821.8	1790	**Usable**	ND Parks & Rec	Dick Messerly	337-5576
Four Bears Park (south low water)	concrete planks	1820.7	1805.5	**Usable**	Three Affiliated Tribes	Alan Chase	627-4018
Garrison Creek Cabin Site	poured concrete	1857	1802	**Usable**	Garrison Cabin Assc.	Percy Radke	337-2247
Government Bay (low water)	slide-in metal sections	1815	1803	**Usable**	Corps of Engineers	Linda Phelps	654-7411
Government Bay (main ramp)	poured concrete	1857	1810	**Usable**	Corps of Engineers	Linda Phelps	654-7411
Hazen Bay (2nd low water)	poured concrete	1830.6	1808	**Usable**	Hazen Park Board	Mannie Hendrickson	748-5958
Indian Hills (2nd low water)	concrete planks	1817.6	1807	**Usable**	Parks & Rec/Tribes	Kelly Sorge	743-4122
Indian Hills (3rd low water)	Will need to reinstall	1810	1795				
McKenzie Bay (east ramp)	poured concrete	1850.9	1796	**Usable**	McKenzie Marine Club	Rhonda Logan	579-3366

Location	Type	Top Elevation	Bottom Elevation	Comments	Managing Agency	Contact Person	Phone
New Town (proposed ramp)	slide-in metal sections	1819.0	1806.0	**Usable**	New Town Park Board	Dusty Rhodes	627-3900
Parshall Bay (2nd low-water)	slide-in metal sections	1817.8	1808.5	**Usable**	Mountrail County Park Board	Clarence Weltz	627-3377
Pouch Point (3rd low-water)	slide-in metal sections	1819	1807	**Usable**	Three Affiliated Tribes	Paul Danks	627-3627
Pouch Point (2nd low-water)	poured concrete	1834.8	1813	**Usable**	Three Affiliated Tribes	Paul Danks	627-3627
Reunion Bay (2nd low water)	concrete planks	1826.6	1808	**Usable**	Corps of Engineers	Linda Phelps	654-7411
Sakakawea State Park (main)	poured concrete	1850	1800	**Usable**	ND Parks & Rec	John Tunge	487-3315
Sakakawea State Park (low water)	will need to finish ramp	1807	1790				
Sanish Bay (Aftem) (low water)	poured concrete	1830.8	1807.4	**Usable**	Aftem Lake Development	Gerald Aftem	852-2779
Skunk Creek Recreation Area (main)	poured concrete	1840	1806.5	**Usable**	Three Affiliated Tribes	Ken Danks	290-2841
Sportsmen's Centennial Park	poured concrete	1831.6	1808.5	**Usable**	McLean County	Les Korgel	462-8541
Sportsmen's Centennial Park (2nd low water)	slide-in metal sections	1810	1795	**Usable**			
Steinke Bay	poured concrete	1833.1	1813.4	**Usable**	North Dakota Game & Fish	Bob Frohlich	328-6346
Van Hook (Gull Island south low-water)	metal bridge deck sections	1817.8	1805	**Usable**	Mountrail County Park Board	Clarence Weltz	627-3377
Van Hook (west low water ramps)	poured concrete	1821.2	1808	**Usable**	Mountrail County Park Board	Clarence Weltz	627-3377
White Earth Bay (main)	poured concrete	1850.9	1801	**Usable**	Mountrail County Park Board	Greg Gunderson	755-3277
Wolf Creek Recreation Area (1st low water)	poured concrete	1833.8	1802.5	**Usable**	Corps of Engineers	Linda Phelps	654-7411

Noxious Weeds Overview

1. Project personnel are continuing efforts to combat noxious weeds.
2. $440,000 programmed for noxious weed control in FY 2007.

Cultural Resources Overview

1. Corps and Tribal personnel continue to monitor the shoreline for exposure of cultural site and opportunities for protection of sites.
2. Stabilization efforts are underway at two sites on Lake Sakakawea. An additional stabilization is possible depending on funds availability.
3. A sizeable inventory will be conducted on part of the Lake during this fiscal year. Results will assist in accurately identifying sites on and away from the shoreline.

Other Areas of Interest/Concern

1. Garrison National Fish Hatchery – Three issues exist and are of concern to the State of North Dakota and the U.S. Fish and Wildlife Service.
    a. Addition of a fifth boiler and necessary power for operation.
    b. Ability to fill 40 rearing ponds.
    c. Adequacy of the existing 20-inch water supply line from the penstocks.
2. Fact sheets for the hatchery issues exist. OP-TM is investigating a design for additional power requirements to the hatchery. An MOU may need to be set up to address future operating needs and requirements.
3. Garrison Cold Water Fishery – The lower portion of the intake for Unit 1 was blocked during the week of May 14, 2007. The underwater inspection of the existing plywood barriers, utilizing a remote operated camera, and the removal of one of the trash racks to perform a physical inspection to ensure integrity of the plywood, j-bolts, etc. showed that the materials were in excellent condition.
4. Based on review of the data gathered from the new instrumentation, the elevation restriction between Lake Audubon and Garrison reservoir was lifted. Also, water was pumped from Lake Sakakawea into Lake Audubon to bring the lake back to its historic normal elevation.

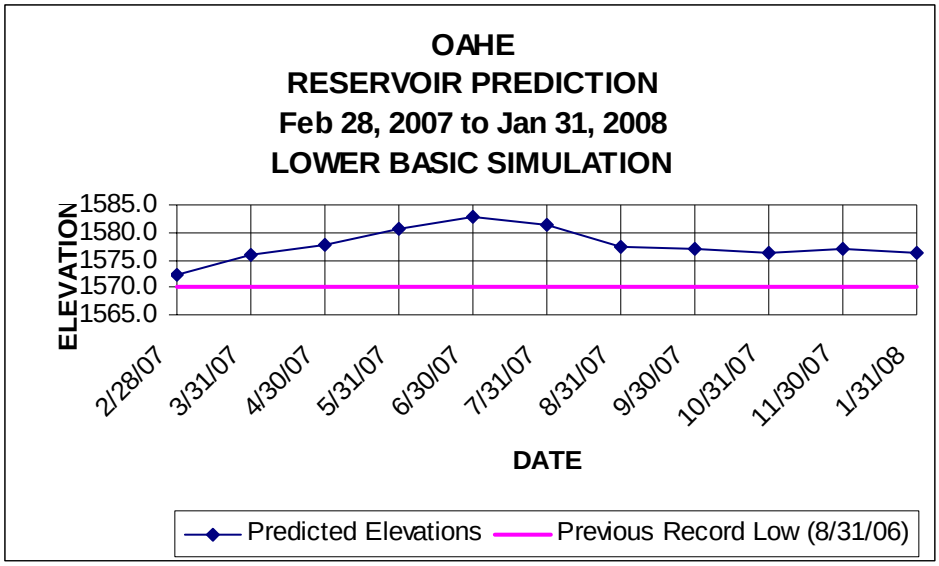
Oahe, South Dakota

Reservoir Elevation Overview

Lake Elevation 07/31/2006 (ft. msl)	Current Lake Elevation 07/31/2007 (ft. msl)	30-Day Projected Elevation (08/31/2007) (ft. msl)	180-Day Projected Elevation (01/31/2008) (ft. msl)
1573.4	1581.4	1577.4	1576.4

Comments:

1. Current reservoir elevation is 24.6-feet below the top of conservation pool (elevation 1607.5 ft. msl).
2. Projections provided are based upon the Lower Basic Simulation prepared by the Reservoir Control Center.
3. Current reservoir elevation is 7.1-feet higher than 06/30/06 (1577.0).
4. Record low for the reservoir is 1570.17 on August 31, 2006.



Water Intake Overview

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Ft. Yates	Operational	1581.4	1571.2	1573	1572.2*	1575.2*	3,400	Y	SRST/BOR

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. A backup well has been drilled and tested.
3. New well and plumbing is installed at Fort Yates and can be used as a backup water source.

*Intake is in riverine conditions and flow to the intake may be influenced by releases from Garrison reservoir.

Future Plans:

1. The intake at Fort Yates remains in a river condition and may continue to have sedimentation problems as long as Oahe remains below elevation 1580. Sediment levels in the sump are measured weekly and the river channel is monitored.
2. Contingency plans are in place and have been exercised.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Wakpala	Operational	1581.4	1563	1563	1566	1569	>500	N	SRST/BOR

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005, a new low profile screen was installed lowering the top of the screen elevation to 1563, this elevation was confirmed in February 2007.
2. Contingency plans are being drafted to respond to an intake failure. Initial response to an intake failure at Wakpala would be hauling water from the city of Mobridge to the treatment plant to be distributed using the existing transmission lines.
3. Recent forecasts indicate that the reservoir will not fall below elevation 1575.8. Based on this, it is not anticipated that the intake will experience any operational concerns for the foreseeable future.

Intake	Status	Current Reservoir Elev.	Top of Screen Elev.	Operational Concern Elev.	Shutdown Elev.		Population Supported	Contingency Plan? (Y/N)	Resp. Agency
					Summer	Winter			
Mní Wasté	Operational	1581.4	1555.7	1580	1561.9	1560.4	14,000	Y(DRAFT)	CRST

Comments:

1. Top of Screen Elevation taken from survey completed by the Corps in 2005.
2. Construction of a temporary intake approximately 16 miles from the existing intake is underway and is proceeding well. The construction project is a collaborative effort between the Tribe, the State, the Corps and many other entities.

Access Overview

1. The State of South Dakota is responsible for maintaining recreational areas and access to the reservoir in South Dakota. The Oahe Project maintains the access in North Dakota. To view ramp status on Oahe in South Dakota, click on the following link:
   Oahe Boat Ramp Status in South Dakota

2. Ramps on Oahe Project in North Dakota:

AREA	Status
Sibley Park	Unusable
Little Heart Bottoms	Marginal
Kimball (Desert)	Usable
Graner's Bottoms	Usable
Maclean Bottoms	Usable
Hazelton	Usable
Ft. Rice	Usable
North Beaver Bay	Usable
Walker Bottoms	Usable
Jennerville (Rivery)	Usable
Fort Yates	Unusable
Cattail Bay	Unusable
Langeliers Bay	Unusable
Beaver Creek	Unusable
State Line	Unusable

http://www.gf.nd.gov/boating/mo-riv-system-boatramps-status.html

Noxious Weeds Overview

1. $400,000 programmed for noxious weed control in FY 2007.

Cultural Resources Overview

1. Corps and Tribal personnel continue to monitor the shoreline for exposure of cultural site and opportunities for protection of sites.
2. Stabilization efforts are underway at two sites on Lake Oahe. One stabilization project is already completed while the other is scheduled to be completed by the end of summer.

Mainstem Reservoir Information, Weekly Elevation Comparison

2 July 2007	Project Information		Reservoir Elevation			Reservoir Storage		
Project	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (7/2/07)	Previous Elevation (6/25/07)	Change	Current Storage (MAC-FT) (7/2/07)	Previous Storage (MAC-FT) (6/25/07)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 – 2250	2203.1	2202.9	0.2	9.465	9.447	0.018
Garrison, ND	1775 – 1850	1850 – 1854	1818.1	1817.6	0.5	12.788	12.703	0.085
Oahe, SD	1540 - 1617	1617 – 1620	1582.9	1582.8	0.1	12.341	12.356	-0.015
Big Bend, SD	1415 – 1422	1422 – 1423	1420.7	1420.6	0.1	1.676	1.657	0.019
Ft. Randall, SD	1320 – 1365	1365 – 1375	1356.0	1356.1	-0.1	3.620	3.627	-0.007
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1205.5	1206.0	-0.5	0.345	0.358	-0.013

9 July 2007	Project Information		Reservoir Elevation			Reservoir Storage		
Project	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (7/9/07)	Previous Elevation (7/2/07)	Change	Current Storage (MAC-FT) (7/9/07)	Previous Storage (MAC-FT) (7/2/07)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 – 2250	2203.1	2203.1	0.0	9.456	9.465	-0.009
Garrison, ND	1775 – 1850	1850 – 1854	1818.1	1818.1	0.0	12.820	12.788	0.032
Oahe, SD	1540 - 1617	1617 – 1620	1583.1	1582.9	0.2	12.342	12.341	0.001
Big Bend, SD	1415 – 1422	1422 – 1423	1420.9	1420.7	0.2	1.677	1.676	0.001
Ft. Randall, SD	1320 – 1365	1365 – 1375	1355.4	1356.0	-0.6	3.567	3.620	-0.053
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1205.3	1205.5	-0.2	0.344	0.345	-0.001

16 July 2007	Project Information		Reservoir Elevation			Reservoir Storage		
Project	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (7/16/07)	Previous Elevation (7/9/07)	Change	Current Storage (MAC-FT) (7/16/07)	Previous Storage (MAC-FT) (7/9/07)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 – 2250	2202.9	2203.1	-0.2	9.426	9.456	-0.030
Garrison, ND	1775 – 1850	1850 – 1854	1817.7	1818.1	-0.4	12.754	12.820	-0.066
Oahe, SD	1540 - 1617	1617 – 1620	1582.9	1583.1	-0.2	12.349	12.342	0.007
Big Bend, SD	1415 – 1422	1422 – 1423	1420.5	1420.9	-0.4	1.658	1.677	-0.019
Ft. Randall, SD	1320 – 1365	1365 – 1375	1353.9	1355.4	-1.5	3.444	3.567	-0.123
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1205.9	1205.3	0.6	0.359	0.344	0.015

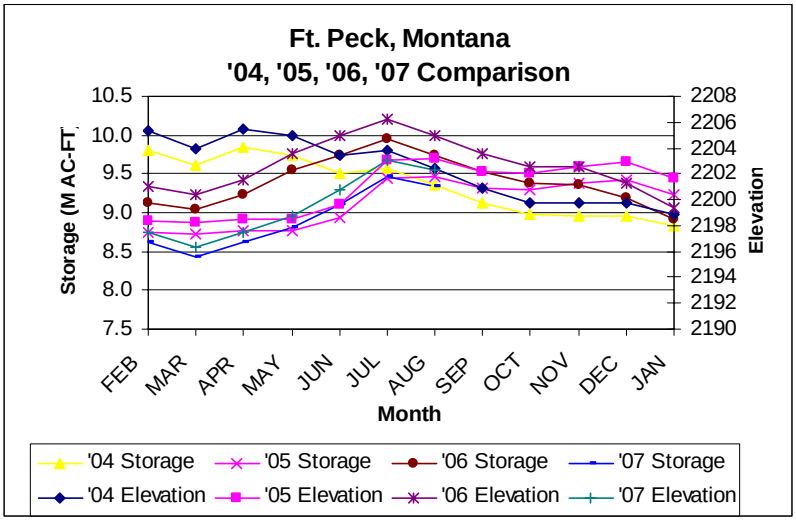
23 July 2007	Project Information		Reservoir Elevation			Reservoir Storage		
Project	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (7/23/07)	Previous Elevation (7/16/07)	Change	Current Storage (MAC-FT) (7/23/07)	Previous Storage (MAC-FT) (7/16/07)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 – 2250	2202.6	2202.9	-0.3	9.395	9.426	-0.031
Garrison, ND	1775 – 1850	1850 – 1854	1817.5	1817.7	-0.2	12.651	12.754	-0.103
Oahe, SD	1540 - 1617	1617 – 1620	1582.3	1582.9	-0.6	12.226	12.349	-0.123
Big Bend, SD	1415 – 1422	1422 – 1423	1420.3	1420.5	-0.2	1.659	1.658	0.001
Ft. Randall, SD	1320 – 1365	1365 – 1375	1353.9	1353.9	0.0	3.438	3.444	-0.006
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1206.8	1205.9	0.9	0.379	0.359	0.020

30 July 2007	Project Information		Reservoir Elevation			Reservoir Storage		
Project	Multi-Purpose Pool Elev.	Flood Control Pool Elev.	Current Elevation (7/30/07)	Previous Elevation (7/23/07)	Change	Current Storage (MAC-FT) (7/30/07)	Previous Storage (MAC-FT) (7/23/07)	Change (MAC-FT)
Ft. Peck, MT	2160 - 2246	2246 – 2250	2202.4	2202.6	-0.2	9.356	9.395	-0.039
Garrison, ND	1775 – 1850	1850 – 1854	1817.0	1817.5	-0.5	12.651	12.651	-0.114
Oahe, SD	1540 - 1617	1617 – 1620	1581.9	1582.3	-0.4	12.226	12.226	-0.112
Big Bend, SD	1415 – 1422	1422 – 1423	1420.3	1420.3	0.0	1.659	1.659	-0.008
Ft. Randall, SD	1320 – 1365	1365 – 1375	1353.6	1353.9	-0.3	3.438	3.438	-0.017
Gavins Point, SD	1204.5 - 1208	1208 - 1210	1206.5	1206.8	-0.3	0.379	0.379	-0.008

Mainstem Reservoir Storage Comparison – Water Years 2004, 2005, 2006, 2007

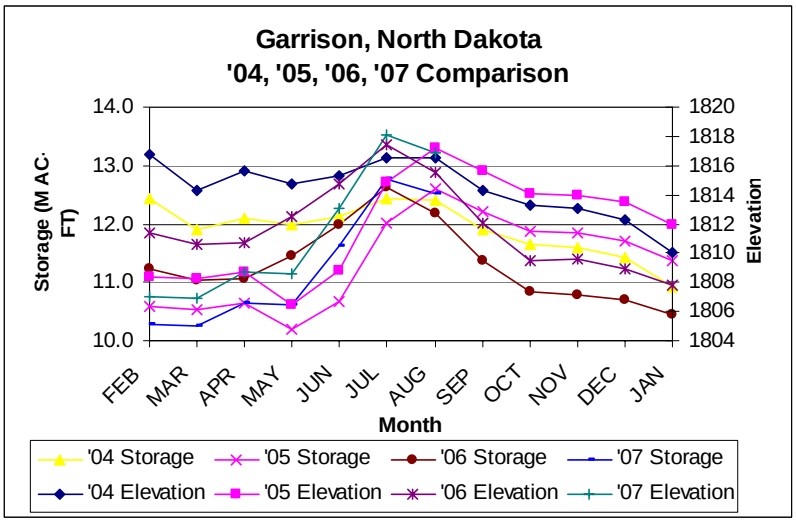
Fort Peck, Montana

Water Year 2004 (FEB 2004 - JAN 2005)		Water Year 2005 (FEB 2005 - JAN 2006)		Water Year 2006 (FEB 2006 - JAN 2007)		Water Year 2007 (FEB 2007 - JAN 2008)	
Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)
2204	9.603	2198.3	8.732	2200.4	9.048	2197.5	8.618
2205.5	9.837	2198.6	8.773	2201.5	9.222	2196.3	8.440
2204.9	9.740	2198.6	8.773	2203.5	9.540	2197.5	8.619
2203.4	9.507	2199.6	8.935	2205.5	9.741	2198.8	8.804
2203.8	9.565	2203.0	9.448	2206.3	9.962	2200.8	9.103
2202.4	9.357	2203.2	9.472	2206.2	9.958	2203.1	9.465
2200.9	9.121	2202.2	9.325	2204.9	9.750	2202.3	9.342
2199.8	8.969	2202.0	9.286	2203.6	9.525		
2199.8	8.963	2202.6	9.371	2202.5	9.359		
2199.8	8.961	2202.9	9.432	2202.6	9.383		
2198.9	8.829	2201.6	9.223	2199.4	8.913		
2198.5	8.749	2201.0	9.134	2199.4	8.907		



Garrison, ND

Water Year 2004 (FEB 2004 - JAN 2005)		Water Year 2005 (FEB 2005 - JAN 2006)		Water Year 2006 (FEB 2006 - JAN 2007)		Water Year 2007 (FEB 2007 - JAN 2008)	
Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)
1814.3	11.891	1808.2	10.538	1811.4	11.040	1807.0	10.277
1815.6	12.197	1808.7	10.632	1810.6	11.076	1806.9	10.241
1814.7	11.989	1806.6	10.189	1810.7	11.460	1808.7	10.631
1815.3	12.121	1808.8	10.665	1812.5	11.992	1808.6	10.612
1816.5	12.426	1814.9	12.026	1817.3	12.628	1813.1	11.612
1816.5	12.401	1817.2	12.591	1817.4	12.629	1818.1	12.774
1814.3	11.914	1815.8	12.216	1815.5	12.172	1816.9	12.514
1813.3	11.645	1814.1	11.861	1812.1	11.372		
1813.1	11.589	1814.0	11.837	1809.5	10.838		
1812.3	11.422	1813.5	11.707	1809.6	10.822		
1810.0	10.936	1812.0	11.368	1807.8	10.441		
1808.4	10.574	1811.4	11.222	1807.8	10.439		



Oahe, SD

Water Year 2004 (FEB 2004 - JAN 2005)		Water Year 2005 (FEB 2005 - JAN 2006)		Water Year 2006 (FEB 2006 - JAN 2007)		Water Year 2007 (FEB 2007 - JAN 2008)	
Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)	Elevation	Storage (MAC-Ft.)
1577.6	11.204	1575.2	10.715	1576.8	11.037	1572.9	10.287
1579.2	11.504	1576.2	10.924	1577.6	11.209	1572.3	10.151
1582.1	12.110	1574.29	10.568	1576.7	11.024	1575.8	10.839
1581.6	12.056	1574.82	10.608	1577.4	11.150	1577.7	11.221
1578.4	11.338	1576.47	10.980	1577.0	11.088	1580.5	11.826
1576.8	11.045	1577.6	11.214	1575.8	10.881	1582.8	12.346
1574.3	10.540	1576.38	10.958	1573.4	10.378	1581.4	12.045
1572.1	10.112	1572.6	10.363	1570.3	9.807		
1573.2	10.316	1572.63	10.267	1571.4	9.998		
1574.8	10.608	1573.9	10.501	1572.6	10.214		
1576	10.866	1575.6	10.814	1572.9	10.263		
1575.8	10.824	1575.3	10.75	1572.8	10.260